PRINCIPAL SOURCES AND DISPERSAL PATTERNS OF SUSPENDED PARTICULATE MATTER IN NEARSHORE SURFACE WATERS OF THE NORTHEAST PACIFIC OCEAN AND THE HAWAIIAN ISLANDS _/

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Type I Progress Report

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a. PRINCIPAL SOURCES AND DISPERSAL PATTERNS OF SUSPENDED PARTICULATE MATTER IN NEARSHORE SURFACE WATERS OF THE NORTHEAST PACIFIC OCEAN AND THE HAWAIIAN ISLANDS.

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b. GSFC ID No. of P.I.: IN 011

c. The first ERTS-1 imagery was not received until mid-October, and did not include any coverage obtained prior to September 17, 1972. This means that for the first two months of the satellite's existence we had no coverage of our target areas. Several teams of geologists were mapping in the ERTS-1 target areas during this time. We have the "ground truth" but no imagery to accompany it. Five cruises were conducted in the San Francisco Bay estuary, the number one target area. One of these cruises was coordinated with an overflight by a P-3 aircraft from Houston, MSC, coincident with an overflight by the spacecraft--again a case where we collected "water truth" but have not received the satellite imagery needed to observe synoptically this prime source of suspended particulate matter.

d. Water-monitoring cruises were made in San Francisco Bay during August, September, and October. Variables measured included concentration and particle size of suspended particulate matter, percent of light transmission (turbidity), chlorophyll A, temperature,

salinity, and nutrients. The dates of the cruises were August 9-11, August 23-25, August 31, September 11-14, September 18-22, September 25-26, and October 2-5. The only satellite imagery of San Francisco Bay received to date was collected September 18 and 19, when the bay was largely cloud covered. An overflight by a P-3 aircraft from NASA, Houston was made August 31, 1972 coincident with a water cruise in south San Francisco Bay and a satellite overpass. We are presently studying the aerial photography taken from an altitude of 25,000 feet, and are comparing these photos with water-truth data collected concurrently. Preliminary studies of the aerial photos and water data are promising. Turbidity measurements appear to correlate fairly well with patterns observed on the color infra-red photography. When we are able to obtain the satellite imagery of San Francisco Bay collected on August 31, 1972 we will compare it with the aerial photography and the water-truth measurements to see how well the three observations correlate.

d.1. Activities planned for next report period: Streams in southern Oregon and northern California will be sampled for suspended sediment. Composition of the suspended load will be analyzed, and concentrations of the suspended material will be calculated and related to stream discharge. Light aircraft will be chartered for reconnaissance purposes coincident with passes of the satellite. In addition, water-monitoring cruises are planned for San Francisco Bay and the

Gulf of the Farallones for late November and mid-December to coincide with satellite passes. Data to be collected include concentrations of suspended sediment, percent light transmission, temperature and salinity. Surface drift cards will be released during December to provide data on the near-surface water circulation. Reconnaissance flights in light aircraft will be made over the central California coast target area to provide continuity between satellite passes in coverage of the river effluents, the principal sources of suspended particulate matter during the rainy season.

e. No significant scientific results to report yet: we have just begun to receive imagery.

f. None.

g. None.

h. No changes.

i. None.

j. None.

k. N/A.